REPORT OF A CASE OF BUBONIC PLAGUE.*

By E. L. WEMPLE, M. D.

PLAGUE is a very virulent, infectious disease, caused by a specific organism which results in the formation of one or more buboes, or in the development of a virulent form of confluent pneumonia. Two varieties are commonly known; the bubonic and the pneumonic; in the former buboes occur in the femoral, inguinal, axillary, tonsillar and cervical regions; in the latter there are no buboes, but the septic process manifests itself in the mesentery, the gastro-intestinal tract, the lungs, kidneys and the brain.

This disease is supposed to have existed as early as the second century of our era. In the seventeenth century it raged in London, and in the present century there have been epidemics in China and India. William Osler says the endemic centers of the bubonic plague are in Tripoli, southwestern Arabia, a large section of Asia, comprising Mesopotamia, Persia, and Kurdestan; the districts of Koauman and Gurwhal in northwestern India, and southwestern China. In 1893 Kitasako described the bacillus pestis (which he found) in the blood. The bacillus described by Yersin differs slightly from that of Kitasako.

C. A. Viegas was the first to report the outbreak of bubonic plague in Bombay, in 1897. He believes that the disease is due to, or at least favored by, the accumulation of sewage filth; that the predisposing causes are warm climate, poverty and youth.

Following this report is the investigation of the disease by the Plague commission of the Imperial Academy for Sciences of Vienna, and as a result of their work they recognize two varieties, the bubonic form and the pustular form. In both of these varieties the swollen glands may undergo resolution or suppuration with or without the development of general septicemia; the true septicemic forms commencing with high fever, delirium and collapse; the pneumonic form commencing with chills, rapidly increasing dullness in one or more lobes of the lungs, and serous, white or rusty sputum, and is to be distinguished from croupous pneumonia by the extreme prostration and a considerably enlarged spleen.

A. H. Doty considers that the short period of incubation of plague (5 days) is the greatest safeguard against its introduction into any country where the disease does not exist. The virus may, however, be transmitted by clothing, articles of merchandise, etc. Small animals, particularly rats, die during epidemics of plague. This fact has suggested that the specific organism discovered by Kitasako and Yersin might be of telluric origin. Whether this be the case or not, there is much evidence in favor of the contention that plague is a soil-bred and supported disease. Although small animals, flies and fleas, die of this disease or may spread it, it is more logical to conclude that unsanitary conditions favor its spread.

The disease is ushered in with a chill, the patient reels like a drunkard, owing to marked vertigo, and complains of headache and lassitude. This is apparent in the features, markedly the drooping eyelids. This apathetic air and the indifference to surroundings constitutes the *facies pestis,* so aptly described by Viegas, who lays great stress upon the physiogomy of the disease, which he describes as that of a person who has been taking hypnotics for persistent insomnia, without obtaining sleep. According to Bullard, the tongue is swollen, shows the impression of the teeth, and is covered with a white fur resembling mother of pearl. In the bubonic form the bubo appears in the first few days. It is most frequently in the groin, next axilla and the neck. The neighboring tissues become tumefied and edematous; the pulse often slow at first, soon becomes small and rapid; delirium and excitement now appear, and often the patient must be tied in the bed. Physical disorders are manifest, and speech is disturbed. The bubo occasionally suppurates or becomes gangrenous; carbuncles and extensive petechiæ (plague spots of old writers) often occur.

On Monday, 11 a. m. October 27th, 1902, I was called to see Arthur W. Caswell, at 409 Turk street. He was 33 years old, married, a clerk in a furnishing store on Third street, and said to be dissipated in his habits. During the two weeks prior to his illness he had tried on new clothes for as many as a dozen soldiers who had just returned from Manila. I found him suffering from backache, stiffness of the limbs, a feeling of anxiety and restlessness, and great systemic depression. The tongue was brown in the center, with red margins. He refused all food, was nauseated, and had been vomiting. The bowels had moved several times in the three preceding days. The patient dated all his illness from the night of the 24th of October, and says a tumor came down while at stool. From this time on he felt the tumor in the right groin, and the pain soon became intense. I found him with a pulse of 96, respiration 30, temperature 103.8. The tumor felt like a large mass of swollen glands in the femoral region; but as there was another

* Read before the Academy of Medicine, San Francisco, at the Regular November Meeting, 1902.

above Poupart's ligament I was in doubt as to its true nature, and advised that he be taken to the hospital, where I would remove the mass; and at 1:30 p. m. on the same day, October 27th, I operated, and cutting into the tumor found it to be composed of large lymphatic glands, many of them hemorrhagic and not unlike placental tissue in appearance. There was an edematous condition of the skin and underlying structures from which oozed a glistening serum. I dissected out the glands from the pubic portion of the fascia lata, when I found that the swollen chain extended up into the pelvis. I then suspected that it might be a case of bubonic plague, and had the patient quarantined in a room.

Dr. Wemple, Jr., made a smear that afternoon, and the picture was very much like that of the disease. This smear was shown to Dr. H. A. L. Ryfkogle, and it was his opinion that it contained bacillus pestis, there being a diplococcus infection as well. He said the inoculation of a guinea pig from the contents of a gland and its death from plague was all that was necessary to make a positive diagnosis of bubonic plague. This was subsequently done by Dr. M. J. White, of the United States plague laboratory, and the diagnosis was bacteriologically confirmed.

Before operation the temperature was 104, pulse 94, and respiration 34. At 8:45 p. m., or five hours after the operation, the temperature was 103, pulse 96, respiration 36. The pain was less severe, in fact he was very easy much of the time, though he complained of being chilly. One-thirtieth of a grain of strychnine was given every four hours. At 10:15 p. m. the temperature was 104.8, and one hour after 60 cc of Yersin serum was given it dropped to 101.8, pulse 94, and soft. From this time on till 2:45 p. m. October 28th, his temperature did not rise above this mark, and the pulse became slower, but weaker.

The general condition seemed to be better in every way. The anxious expression and restlessness were much lessened.

The following record is taken from the City and County Hospital, where the patient was removed and quarantined October 28th, 1902:

October 28th.—During the day the temperature ranged from 101 to 101.5 with pulse of 98. He was very restless and nauseated, but did not vomit, nor did he sleep. 20 cc of Yersin serum were given, and 2 ounces of whiskey. He voided six ounces of urine.

October 29th.—Temperature ranged from 102.2 to 102.5; pulse ranged from 98 to 125; respiration from 24 to 32. Slept half an hour. At 12 m. he became delirious. Up to this time he complained of great pain in his back and abdomen. 20 cc of Yersin's serum and two ounces of whiskey were given. At midnight he was so delirious that he had to be held in the bed.

October 30th.—Temperature 102.3-5 to 104; pulse 108 to 120; respirations 30 to 34. At 4 p. m. he was delirious and sweating profusely. Forty cubic centimeters of Yersin's serum given. At 11 p. m. 20 cc of serum given intravenously in each arm; after this, 80 cc more were given with no effect; still delirious and no sleep. One-thirtieth of a grain of strychnine was given, 18 ounces of milk and one egg.

October 31st.—Temperature 104.4-5 at 2:30 a. m. Pulse 150, respiration 30. At 8 a. m. the temperature was 102 2-5, pulse 110, respiration 30. This was after 60 cc of serum had been injected and the bowels moved with calomel. Three-thirtieth of a grain of strychnine was given from 2:30 a. m. to 8 a. m. At 12 m. the temperature was 104 2-5, pulse 130, respiration 32. One-tenth of a grain of strychnine and one fiftieth of a grain of atropin were given between 12 and 5:50 p. m. He became unconscious at 5:30, and at 5:50 his temperature was 108 2-5, pulse 170, respiration 43. 20 cc of serum were given. At 6:15 he died.

I am indebted to Dr. Howard Morrow, City Bacteriologist, for the following report of his investigations:

"Smears from the iliac and lumbar glands showed no organisms. Smears from the spleen showed a few pest-like bacilli. Pure cultures were obtained from these organs. A pig was inoculated by the skin method with a gland removed at the time of the operation, and he died on the sixth day. The post mortem findings were characteristic of plague. Pigs were inoculated with pure cultures and died in the usual manner. Cultures and sub-cultures from the human spleen and from the pig's spleens grew characteristically on the various media; culture tubes inoculated with blood from the ear during life failed to grow colonies. Cultures from the wound the day following the operation showed a mixed infection of pest bacilli and pus cocci."

Diagnosis—Bubonic plague with secondary involvment of the lungs.

Through the courtesy of Dr. Morrow I am able to give you the following report of the autopsy as made by Dr. M. J. White, of the United States plague laboratory:

"The ilac and lumbar glands on the right side were enlarged, injected and contained areas of hemorrhages. Some of the glands were broken down, the surrounding tissues being edematous and herorrahgic. The edema extended as high as the right kidney. The spleen was normal in size, its capsule being wrinkled and the pulp very soft. The hypogastric glands were necrotic, but not hemorrhagic. The lungs besides being somewhat edematous posteriorly contained a few small areas of consolidation in the middle lobe of the right lung. The heart showed an acute

myocarditis. The ureters and supravenal capsules appeared normal. The glands of the axillæ and the left inguino-femoral region were slightly enlarged and showed corticle hemorrhages."

REFERENCES.

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Bacteriology, by Dr. Howard Morrow.

Post Mortem notes by Dr. M. J. White.

CALIFORNIA ACADEMY OF MEDICINE.

REGULAR MEETING IN NOVEMBER.

The regular monthly meeting of the California Academy of Medicine was held at the offices of Dr. Harry M. Sherman on Tuesday evening, November 25, 1902.

The following papers had been announced to be read before the Academy:

"Changes Noted in Renal and Perirenal Tissues, Following Decapsulation of the Kidney of the Dog," with exhibition of specimens, by Harold Johnson, M. D. (by invitation).

"A Case of Plague," by E. L. Wemple, M. D. (by invitation).*

"Persistent Glossitis in Secondary Syphilis," by D. W. Montgomery, M. D.

"On the Denudation and the Suture in Repair of the Perineum," by G. B. Somers, M. D.

In the discussion on Dr. Wemple's paper, Dr. Harold Johnson asked what diagnosis had been made before the operation. Dr. Wemple replied that no definite diagnosis had been made.

The President, Dr. Montgomery, called attention of the members to the great importance of the paper under discussion. He stated that plague cases had been found in five hospitals in the city, and there was no doubt that eventually it would appear in every hospital in San Francisco.

Dr. J. Henry Barbat said that he had seen the patient a few hours before the operation and made but a casual examination. He ran his hand over the swollen glands and found they were very tender. He made a snap diagnosis, based on previous experience, of a possible hernia containing a perforated appendix. That infection was present was evident from the appearance of the skin.

Dr. Rixford asked if the patient had vomited before the operation, and if his bowels had moved. Dr. Wemple replied that the patient had vomited several times, and that the bowels had moved prior to the operation. He did not consider it could be a case of plague, for the man had said he had not been in Chinatown for months. He further said he had not known that plague had got outside Chinatown.

Upon being requested to speak to the question, Dr. Glennan of the United States Marine Hospital Service, who was present, replied that owing to the fact he was in the city on official business connected with his department he did not feel at liberty to give any expression of his opinion on the subject.

Dr. Montgomery said that in his opinion plague had come to San Francisco to stay; that we would have to accept the situation and work with an understanding that such is the case. In his opinion it was the price we are called upon to pay for the Oriental trade.

Dr. Wemple, in closing the discussion, said the President and himself seemed to be the only two physicians present who were willing to freely discuss the question. It was the first case of plague he had seen, and he had not previously devoted much time to studying the published literature on the subject. He considered it the duty of every physician to at once thoroughly post himself on the subject of the disease, as he might encounter it at any time.

In the discussion on Dr. Johnson's paper, Dr. Tait gave a resume of the work along this line done upon a rabbit by Alberson. He highly commended the work done by Dr. Johnson, and urged that he should continue his investigations. All of this experimental work seemed to show that the claims made by Edebohls could not be substantiated. He thought the tendency of surgeons to enter upon the field of the medical man, without cooperation with the pathologist, was decidedly wrong.

Cases Presented—Dr. Harry M. Sherman presented a patient who had suffered for several years from trigeminal neuralgia of the left side, mainly confined to the third branch. For several years he had taken everything recommended to him, but, as usual, without relief. He was first seen by Dr. Sherman a year ago. Operation was recommended at the time, but was rejected. One month ago the patient returned, having decided to undergo the operation. Dr. Sherman said the operation resulted in a complete therapeutic success. He started to do Frazer's operation, but when the bone was cut into hemorrhage was profuse, and the operation was long and tedious. It was often necessary to pack the flow and wait for ten or fifteen minutes at a time. He saw the ganglion vaguely, on account of the profuse hemorrhage from the very adherent and thickened dura. The ganglion was removed, the wound packed, latter sewed, and the result satisfactory. The patient had no subsequent neuralgia. The region of the third nerve is now anesthetic. He did not remove the zygoma, as

* Dr Wemple's paper will be found in full on preceding pages of the *Journal*.